PATENT COOPERATION TREATY
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY PCT

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 12430500/R	**FOR FURTHER ACTION**	See Form PCT/IPEA/416

International application No. **PCT/AU2004/000375**	International filing date *(day/month/year)* 26 March 2004	Priority date *(day/month/year)* 28 March 2003

International Patent Classification (IPC) or national classification and IPC

Int. Cl.[7] G06T 15/00

Applicant

 DATA IMAGING PTY LIMITED et al

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1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

 a. [X] *(sent to the applicant and to the International Bureau)* a total of **14** sheets, as follows:

   [X] sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

   [ ] sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

 b. [ ] *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

 [X] Box No. I Basis of the report

 [ ] Box No. II Priority

 [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

 [ ] Box No. IV Lack of unity of invention

 [X] Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

 [ ] Box No. VI Certain documents cited

 [ ] Box No. VII Certain defects in the international application

 [ ] Box No. VIII Certain observations on the international application

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Date of submission of the demand 27 January 2005	Date of completion of the report 23 May 2005

Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **J.W. THOMSON** Telephone No. (02) 6283 2214

Box No. I	Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language ,
which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1 (b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

☐ the international application as originally filed/furnished

☒ the description:

pages **4-17** as originally filed/furnished

pages* **1-3** received by this Authority on **5 May 2005** with the letter of the same

pages* received by this Authority on with the letter of

☒ the claims:

pages as originally filed/furnished

pages* as amended (together with any statement) under Article 19

pages* **18-28** received by this Authority on **5 May 2005** with the letter of the same

pages* received by this Authority on with the letter of

☒ the drawings:

pages **1/17-17/17** as originally filed/furnished

pages* received by this Authority on with the letter of

pages* received by this Authority on with the letter of

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/figs

☐ the sequence listing (*specify*):

☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/figs

☐ the sequence listing (*specify*):

☐ any table(s) related to the sequence listing (*specify*):

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	**1-91**	**YES**
	Claims		**NO**
Inventive step (IS)	Claims	**1-91**	**YES**
	Claims		**NO**
Industrial applicability (IA)	Claims	**1-91**	**YES**
	Claims		**NO**

2. Citations and explanations (Rule 70.7)

> **D1:** "Principles to Make Your Presentation More Effective"
> The CPA Journal, June 1999 Issue
> obtained from http://www.nysscpa.org/cpajournal/1999/0699/features/f28699.htm

> **D2:** Derwent Abstract Accession No. 97-345385/32, Class W04, JP 09140897-A

The claimed invention is characterised by using a single object to represent three independent financial relationships using the three dimensions of that object. None of the cited art discloses such an arrangement.

Both citations **D1** and **D2** show three dimensional objects which only vary with respect to the data in only one or two dimensions.

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AN IMAGING PROCESS FOR FINANCIAL DATA

FIELD OF THE INVENTION

5   The present invention relates to an imaging process for financial data, and in particular to an image data process and an imaging system and process for generating image display data to represent financial data for a financial product, such as a managed or mutual fund, or shares or stocks in a company, image display data, a graphical user interface, a computer program.

BACKGROUND

10   Financial data can be difficult to comprehend, particularly for non-experts. Consequently, many people rely on investment advisors and other consultants to provide advice in relation to financial products such as shares or stocks and managed funds or mutual funds. Yet consultants can be expensive and introduce a further layer of difficulty for lay persons.

15   To evaluate different investment options, it is often helpful if complex financial data can be graphically represented to enable important characteristics and trends to be easily and rapidly comprehended by visual inspection. This can be particularly important when two or more financial products are to be compared, where each product is characterised by various financial data parameters. For example, owners of and investors in financial

20   products such as shares or stocks, bonds, mutual and other managed funds need to make judgements based on the past, current and prospective values of these assets in order to make buy, hold, and/or sell decisions. However, currently available systems and processes for graphically representing financial data for such products are overly complex for non-expert users. For example, multiple stock or share parameters are typically viewed as text,

25   tables and/or two dimensional graphs or charts that are often difficult to comprehend, and presume a high level of expert knowledge. Consequently, assessing the quality of selected stocks is particularly difficult for non-experts, and this affects the quality of an individual's investment decisions.

It is desired, therefore, to provide image display data, a graphical user interface, a computer program, an image data process, and an imaging system and process that alleviate one or more difficulties of the prior art, or at least provide a useful alternative. In particular, it is desired to provide image display data, a graphical user interface, a computer

5   program, an image data process, and an imaging process and system that allow a lay person to readily assess fundamental characteristics of a financial product without having to possess expertise in financial analysis.

SUMMARY OF THE INVENTION

10   In accordance with the present invention, there is provided an imaging process, including generating image display data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

15   The present invention also provides an imaging process, including generating image display data representing a three-dimensional object, the three dimensions and colour of said object representing respective financial data for a financial product.

The present invention also provides an imaging process, including generating image

20   display data representing a three-dimensional object, the three dimensions of said object representing respective measures of price, income, and growth of a stock.

The present invention also provides an imaging process, including generating image display data representing a three-dimensional object, the three dimensions of said object

25   representing performance data for a fund over respective time periods.

The present invention also provides an imaging process, including generating image display data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions and colour of said object representing respective financial

30   data for a financial product.

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The present invention also provides an image data process, executed by a computing device, including generating image display data for displaying a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing
5   respective financial data for a financial product.

The present invention also provides a system having components for executing the steps of any one of the above processes.

10   The present invention also provides a computer readable storage medium having stored thereon program instructions for executing the steps of any one of the above processes.

The present invention also provides a graphical user interface, including a display of a three-dimensional object at the origin of a spatial coordinate system, the three dimensions
15   of said object representing respective financial data for a financial product.

The present invention also provides a computer program, stored on computer readable media, for generating image display data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing
20   respective financial data for a financial product.

The present invention also provides image display data, including image coordinate data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial
25   product.

The present invention also provides an imaging system, including a visualisation module for generating image display data representing at least one three-dimensional object at the origin of a spatial coordinate system, the three dimensions of each object representing
30   respective financial data for a corresponding financial product.

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CLAIMS:

1.   An imaging process, including generating image display data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

2.   An imaging process as claimed in claim 1, wherein said object is represented isometrically by said image display data.

3.   An imaging process as claimed in claim 1, wherein said object is a cuboid or rectangular parallelepiped.

4.   An imaging process as claimed in claim 1, wherein the three dimensions of said object represent respective parameters of said financial data.

5.   An imaging process as claimed in claim 4, wherein said parameters are selected by a user.

6.   An imaging process as claimed in claim 4, including generating control data for generating user interface components to allow a user to select one or more of said financial product and said parameters of financial data for said product.

7.   An imaging process as claimed in claim 4, including generating at least one of said parameters from said financial data.

8.   An imaging process as claimed in claim 1, wherein the colour of said object represents financial data for said product.

9.   An imaging process as claimed in claim 8, wherein the colour of said object represents a parameter of said financial data.

10.   An imaging process as claimed in claim 9, wherein said parameter includes a measure of risk for said financial product.

11.   An imaging process as claimed in claim 4, wherein said parameters of said financial data for said financial product are normalised with respect to respective parameters of financial data for a plurality of financial products.

12.   An imaging process as claimed in claim 11, wherein said parameters of said financial data for said financial product are normalised with respect to respective parameters of financial data for the overall market for said financial product.

13.   An imaging process as claimed in claim 4, wherein the parameters of said financial data for said financial product are quantized.

14.   An imaging process as claimed in claim 1, wherein the dimensions of said object are quantized.

15.   An imaging process as claimed in claim 1, including generating display data for displaying a financial data value for said financial product in response to movement of a pointing device over a corresponding portion of an image generated from said image display data.

16.   An imaging process as claimed in claim 1, including regenerating said image display data to reflect changes in said financial data.

17.   An imaging process as claimed in claim 1, wherein said image display data includes image animation data for generating an animated representation of said object representing changes of said financial data over time.

18.   An imaging process as claimed in claim 1, wherein said financial product includes a stock.

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19. An imaging process as claimed in claim 18, wherein the three dimensions of said object respectively represent one or more of price, income, growth, return on assets, debt to equity ratio, and volume of trading of said stock.

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20. An imaging process as claimed in claim 18, wherein the three dimensions of said object represent respective measures of price, income, and growth of said stock.

21. An imaging process as claimed in claim 20, wherein said measures include price to

10 earnings ratio, dividend yield, and growth in earnings per share.

22. An imaging process as claimed in claim 21, wherein said measures are normalised with respect to respective measures for a plurality of stocks.

15 23. An imaging process as claimed in claim 18, wherein the colour of said object represents a risk measure for said stock.

24. An imaging process as claimed in claim 20, wherein said risk measure includes a beta value for said stock.

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25. An imaging process as claimed in claim 1, wherein said financial product represents an aggregate of funds.

26. An imaging process as claimed in claim 1, wherein said financial product

25 represents an aggregate of stocks.

27. An imaging process as claimed in claim 1, wherein said financial product represents an aggregate of funds and stocks.

30 28. An imaging process as claimed in claim 1, wherein said financial product includes a managed fund or a mutual fund.

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29.   An imaging process as claimed in claim 28, wherein said dimensions represent respective measures for said fund.

30.   An imaging process as claimed in claim 29, wherein said measures include one or more of financial return, rolling return, entry fee, management expense ratio, and independent rating.

31.   An imaging process as claimed in claim 28, wherein said dimensions represent measures of financial return over respective periods of time for said fund.

32.   An imaging process as claimed in claim 31, wherein said periods are selected by a user.

33.   An imaging process as claimed in claim 31, wherein said periods correspond to 1, 3, and 5 year periods.

34.   An imaging process as claimed in claim 28, wherein the colour of said object represents a risk measure for said fund.

35.   An imaging process as claimed in claim 34, wherein said risk measure represents the volatility of said fund.

36.   An imaging process as claimed in claim 30, wherein said measures are normalised with respect to a plurality of funds.

37.   An imaging process as claimed in claim 1, including generating image display data representing two or more objects for respective financial products to enable comparison of said financial products, wherein the colour of each object represents financial data for the corresponding financial product.

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38. An imaging process as claimed in claim 1, including generating image display data representing two or more objects for respective financial products to enable comparison of said financial products, wherein the three dimensions of each object represent respective financial data for the corresponding financial product.

39. An imaging process as claimed in claim 38, wherein the colour of each object represents financial data for the corresponding financial product.

40. An imaging process as claimed in claim 38, wherein said image display data represents said two or more objects at the origin of a spatial coordinate system.

41. An imaging process as claimed in claim 38, wherein said image display data represents said two or more objects at the origins of respective spatial coordinate systems.

42. An imaging process as claimed in claim 38, wherein said financial products include stocks.

43. An imaging process as claimed in claim 38, wherein said financial products include managed funds or mutual funds.

44. An imaging process as claimed in claim 1, including receiving transaction data in respect of a financial product from a user, and initiating a financial transaction on the basis of said transaction data.

45. An imaging process as claimed in claim 44, wherein said initiating includes initiating a financial transaction with a remote transaction system.

46. An imaging process as claimed in claim 1, including selecting at least one financial product on the basis of a comparison of financial data for said at least one financial product with predetermined financial data.

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47. An imaging process as claimed in claim 46, wherein said predetermined financial data is specified by a user.

5   48. An imaging process as claimed in claim 46, including selecting at least one financial product corresponding to a selected financial product category.

49. An imaging process as claimed in claim 1, including selecting at least one financial product on the basis of a comparison of financial data for said at least one financial
10   product with corresponding financial data for another selected financial product.

50. An imaging process as claimed in claim 49, wherein each said at least one financial product is selected if the dimensions of an object represented by image display data for said at least one financial product are similar to those of the selected financial
15   product.

51. An imaging process as claimed in claim 1, wherein each said at least one financial product is selected if the colour of an object represented by image display data for said at least one financial product is similar to that of the selected financial product.
20
52. An imaging process as claimed in claim 49, wherein said selecting includes selecting at least one financial product if the financial data for said at least one financial product is similar to corresponding displayed financial data for another selected financial product.
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53. An imaging process as claimed in claim 52, wherein financial data for two or more financial products is similar if differences between the respective financial data are within a predetermined value.

30   54. An imaging process as claimed in claim 1, including generating a display of said image display data.

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55.   An imaging process, including generating image display data representing a three-dimensional object, the three dimensions and the colour of said object representing respective financial data for a financial product.

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56.   An imaging process, including generating image display data representing a three-dimensional object, the three dimensions of said object representing respective measures of price, income, and growth of a stock.

10   57.   An imaging process as claimed in claim 56, wherein the colour of said object represents a risk measure for said stock.

58.   An imaging process as claimed in claim 57, wherein said risk measure includes a beta value for said stock.

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59.   An imaging process, including generating image display data representing a three-dimensional object, the three dimensions of said object representing performance data for a fund over respective time periods.

20   60.   An imaging process as claimed in claim 59, wherein said periods are periods of one, three, and five years.

61.   An imaging process as claimed in claim 59, wherein the colour of said object represents a risk measure for said fund.

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62.   An imaging process as claimed in claim 61, wherein said risk measure includes a measure of volatility of said fund.

63.   An imaging process, including generating image display data representing a three-

30   dimensional object at the origin of a spatial coordinate system, the three dimensions

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and colour of said object representing respective financial data for a financial product.

64. An imaging process as claimed in claim 63, wherein said financial data is normalised with respect to other financial products.

65. An imaging process as claimed in claim 64, wherein the colour of said object represents a measure of risk for said financial product.

66. An imaging process as claimed in claim 65, wherein said financial product includes a stock, the dimensions of said object representing price to earnings ratio, dividend yield, and growth in earnings per share for said stock.

67. An imaging process as claimed in claim 65, wherein said financial product includes a managed fund or a mutual fund, the dimensions of said object representing measures of financial return over respective periods of time for said fund.

68. An image data process, executed by a computing device, including generating image display data for displaying a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

69. An image data process as claimed in claim 68, including sending said image display data to a display device for display to a user.

70. An image data process as claimed in claim 68, including generating a display of said object representing said image display data.

71. A system having components for executing the steps of any one of claims 1 to 70.

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72. A computer readable storage medium having stored thereon program code for executing the steps of any one of claims 1 to 70.

73. Image display data generated by executing the steps of any one of claims 1 to 70.

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74. A graphical user interface including image display data generated by executing the steps of any one of claims 1 to 70.

75. An imaging system, including a visualisation module for generating image display
10 data representing at least one three-dimensional object at the origin of a spatial coordinate system, the three dimensions of each object representing respective financial data for a corresponding financial product.

76. An imaging system as claimed in claim 75, wherein the system is adapted to
15 receive said financial data from a remote system to enable said visualisation module to update said image display data.

77. An imaging system as claimed in claim 76, including a server for receiving a request for said image display data and for sending said image display data in
20 response to said request.

78. An imaging system as claimed in claim 76, including a transaction module for initiating a financial transaction on the basis of received transaction data in respect of a financial product.

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79. An imaging system as claimed in claim 75, wherein the financial data for each financial product is normalised with respect to other financial products.

80. An imaging system as claimed in claim 75, wherein the colour of each object
30 represents financial data for the corresponding financial product.

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81.   An imaging system as claimed in claim 80, wherein the colour of each object represents a measure of risk for the corresponding financial product.

82.   An imaging system as claimed in claim 75, wherein each financial product includes a stock, and the three dimensions of each object respectively represent price to earnings ratio, dividend yield, and growth in earnings per share for the corresponding stock.

83.   An imaging system as claimed in claim 75, wherein each financial product includes a managed fund or a mutual fund, and the three dimensions of each object represent measures of financial return over respective periods of time for the corresponding fund.

84.   A graphical user interface, including a display of a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

85.   A graphical user interface as claimed in claim 84, the colour of said object representing financial data for said financial product.

86.   A graphical user interface as claimed in claim 85, the colour of said object representing a risk measure for said financial product.

87.   A graphical user interface as claimed in claim 84, wherein said financial product includes a stock, the three dimensions of each object respectively representing price to earnings ratio, dividend yield, and growth in earnings per share for said stock.

88.   A graphical user interface as claimed in claim 84, wherein said financial product includes a managed fund or a mutual fund, the three dimensions of each object representing measures of financial return over respective periods of time for said fund.

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89. A computer program, stored on computer readable media, for generating image display data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

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90. Image display data, including image coordinate data representing a three-dimensional object at the origin of a spatial coordinate system, the three dimensions of said object representing respective financial data for a financial product.

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91. Image display data as claimed in claim 90, including colour data representing colour of said object, said colour representing financial data for said financial product.

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